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“She just didn’t smell right!” Odour and adoptive family life Julie Selwyn and Sarah Meakings

Our recent studies (Selwyn et al, 2015a, 2015b) of adoptive family life, in circumstances where parenting was very challenging or where the adoption had disrupted, revealed new and interesting findings. One of the most fascinating and unexpected discoveries was the role of smell on adoptive parents and children’s behaviours. For some parents, the child’s odour was a barrier to intimacy. Parents were also aware of how specific smells seemed to trigger children’s early memories and trauma. In this article, we review briefly the literature on odour and consider the implications for social work practice.

Background

Smell is one of the five senses and is known to play an important part in perception, memory, sexual attraction, and in the identification of kin. Yet, why we smell and the impact of smell on everyday life is poorly understood. Perhaps this is because our awareness of smell often acts at a sub conscious level and is a complex, controversial and difficult area to study.

At a basic level, smell works by the nose picking up a scent and transmitting a signal to the olfactory bulb: a brain structure responsible for the sense of smell. In comparison with the human eye, which relies on only four kinds of light sensors, the olfactory system contains 1,000 different types of smell receptors. It is the only central nervous system neurons directly exposed to the environment and is unique in that they are the only neurons known to regenerate, with complete replacement of receptors approximately every 28 days. For more

information on the olfactory system, see the on-line tutorial at <http://www.cf.ac.uk/biosi/staffinfo/jacob/teaching/sensory/olfact1.html>

Each person has a different odour, just as each person has a different fingerprint. Most people cannot smell their own body odour. It is thought that the nose adjusts to scents in order to reduce the impact that these scents have on recognising future scents. For example, if you own a dog you are often unaware that other people perceive your house as smelling of dog!

Most of the research on odour to date has focused on changes in odour due to ageing, neurological conditions, or disease, on the role of odour in sexual attraction, and on the link between odour and memory. There is less research on children's sense of smell or on how odour might influence parenting.

Smell recognition

Research on children and odour has focused on the preference of infants for their mother's smell. The foetus develops the sense of smell during the last trimester of pregnancy (7-8 months gestation) and at birth smell is the most developmentally advanced of all the senses (Sullivan 2000). As vision is not fully developed, the infant depends on smell to find the nipple and their mother. Familiar smells can soothe an infant and a blanket or toy that smells of mother is known to comfort a baby (e.g. Nishitani et al, 2009). Whilst infants can recognise the smell of their mothers from birth so too can mothers recognise the smell of their babies. Studies have found that that 90% of mothers could recognise their baby's smell after only 10-

60 minutes of exposure to their infant (Kaitz et al, 1987; Weisfeld et al, 2003). Smell plays an important role in the development of the attachment relationship.

There is little research on the role of smell as children develop, although one study found that children aged between 3-5 years old could still identify a T-shirt worn by their mother by smell alone and at nine years old could identify the smell of close friends (quoted in Sullivan 2000). Overall, the evidence presented in Sullivan's (2000) review is that young children have an excellent memory of odours with olfactory capabilities that seem to be as good as those of an adult. However, it is claimed that there are a few important olfactory differences between adults and children: children cannot name odours as well as adults, do not spontaneously talk about odours and might not recognise the odour of dangerous household products.

While young children can identify the presence of an odour, the response to odours (pleasant or otherwise) is learned. For example, one study (Noll et al, 1990) found that pre-schoolers raised in a home with a heavy drinker could identify the alcoholic beverage by smell at a reasonably high rate of accuracy. By the time these children were of school age, they were better at identifying and naming alcoholic beverages by smell than being able to name some non-alcoholic beverages (Fossey, 1993). The children had learnt about odours through their experiences in the home. Other research (Herz and Engen 1996) has shown that when areas of the brain connected to memory are damaged, the ability to identify smells is also impaired although the ability to detect a smell remains. We must first remember a smell before identifying it.

Memories

Odour-evoked memories have long been described as "better" and more intense than memories evoked by other cues (e.g. Laird, 1935). Many theorists believe that this is because the olfactory system forms a direct anatomical link with the amygdala-hippocampal complex of the limbic system. Only two synapses separate the olfactory nerve from the amygdala, which is critical for the expression of emotion and human emotional memory. Only three synapses separate the olfactory nerve from the hippocampus, involved in the selection and transmission of information in working memory, short- and long-term memory transfer, and various declarative memory functions. No other sensory system makes this kind of direct and intense contact with the neural substrates of emotion and memory. The closeness may explain why odour-evoked memories are unusually emotionally potent (Keller 2009).

A number of experiments (e.g. Chu and Downes 2002; Herz and Schooler 2002; Willander and Larsson 2006; Toffalo et al, 2012) have shown that odour evoked memories are more vivid, detailed and more emotionally loaded compared with memories elicited through visual or auditory cues. Odour is the strongest trigger of detailed and arousing memories. In addition, the feeling of being brought back in time to the occurrence of the event is experienced as stronger for odour-cued memories than memories evoked by words and pictures. Interestingly, these studies found that autobiographical memories evoked by odours were older than the memories associated with verbal information. Specifically, most odour-cued memories were located in the first decade of life (<10 years), whereas memories associated with verbal and visual cues peaked in late teens and early adulthood (11–20 years). It also appears that learned associations of visual objects with unpleasant odours are more persistent than associations with pleasant ones (Yeshurun et al, 2009).

Gender differences

Women, particularly women of reproductive age, have a more acute sense of smell in comparison with men (Oliveira-Pinto et al, 2014). Females sense of smell changes across the menstrual cycle, peaking at ovulation. When choosing a sexual partner, hetero-sexual women are far more likely to choose a man whose smell is dissimilar to their own genotype (Wedekind and Furi 1997). The choice is unconscious and has been hypothesised as an evolutionary development to prevent incest, providing children with a stronger immune system and reducing the possibility of birth defects (Thornhill et al, 2003). Women are able to detect minute differences in male immunotype by smell (Jacob et al, 2002). Interestingly, females on oral contraceptives have been found to prefer the scent of men similar to their own (Havlicek and Roberts 2009).

While it has long been recognised that dogs and horses can smell fear, research has also found that women also have this capacity (Ackerl et al, 2002). A chemical signal is thought to be secreted in sweat, which communicates the emotion. This is supported by recent research that demonstrated that the odour of the sweat collected from first-time skydivers activated the amygdala in those that smelt the odour (Mujica-Parodi et al, 2009). Stress sweat also affects others' perceptions: the person affected is more likely to be judged as less trustworthy, less competent and lacking confidence (Dalton et al, 2009). Furthermore, a person who is very anxious shows an increased sensitivity to odour and is more likely to perceive a smell negatively compared with someone who is not anxious.

Identification of kin

An article on smell in the New Scientist (2001) began by asking, "Ever wondered if you might be adopted? Try giving your brothers and sisters a good sniff." Citing research (Weisfeld et al,

2003) they reported that family members can identify each other by smell alone, but only if they are genetically related to each other. Of course, it could be argued that the recognition may be because family members share a common environment and therefore smell the same, but the research compared birth and stepchildren to see if a genetic link made a difference. The experiment showed that mothers were very good at identifying their birth children by smell, but not their step-children. Studies (e.g. Case et al, 2009) have also found that the biological mothers preferred the smell of their own children over that of unrelated children. Children in the family were also quite good at distinguishing their full brothers and sisters over their half or step-siblings.

The role of smell in kin recognition and parental investment is documented in many mammalian/vertebrate species. Research on humans, however, has primarily focused on whether parents are able to recognize their children by smell, not whether these chemical cues affect emotional closeness. One of the few exploratory studies (Dubas et al 2009) to examine parental investment found that fathers exhibited more affection and fewer ignoring behaviours toward children whose smell they could identify than toward those whose smell they did not recognize. Mothers reported using more punishment with children whose odour they could not recognize. The research suggests that odour has the ability to modify and control some of our behaviours.

The role of smell in relation to the placement of a child into an adoptive family has not been to our knowledge the subject of research. However, it emerged as a factor that influenced the relationship between parents and children in two studies that examined adoptive families that had or were experiencing great difficulties. Before reporting the observations and

comments made about smell during the research interviews with adoptive parents, we will briefly describe the aims of the studies and methodology.

The studies

Two studies on adoption disruption were recently completed: one funded by the Department for Education (Selwyn et al, 2015a) and the other funded by the Welsh Government (Selwyn and Meakings 2015b). The aims of both studies, using similar methodology, were to: calculate the rate of adoption disruption in England and in Wales and to explore the experiences of those involved in or at risk of disruption. Ethical permission was obtained from the ethics committee of the School for Policy Studies at the University of Bristol and adoptive parents gave written consent to participate in the study. Using national data on 39,687 adoptions our research found that the post order adoption disruption rate was very low: only 3.2% over a 12-year period in England and 2.6 % over an eleven-year period in Wales (Wijedasa and Selwyn 2014). Adoption disruption is not a common event. Nevertheless, an adoption disruption is a traumatic event and so, to understand more about the experience of disruption, a sample of adoptive parents was recruited. Detailed methodology can be found at www.bristol.ac.uk/hadley. In brief, a survey was sent out by 13 English local authorities to parents who had adopted a child between April 1st 2002 and 31st March 2004. Parents were asked how the adoption was faring and if the child was still living at home. The same survey was replicated on the Adoption UK website and could be completed by any parent who had adopted a child from care. Surveys were returned by 390 parents caring for 689 adopted children. A quarter of the parents whose teenage children were still living at home stated that they were finding parenting very challenging and were struggling. From the 390 survey responses, all the parents (n=35) who had experienced an adoption disruption and 35 parents

who described parenting a child living at home as very challenging were selected to form the English interview sample. In addition, 20 families living in Wales (ten disruptions and ten families who were finding parenting very challenging) were recruited using information from local authorities and snowballing techniques.

Face-to-face interviews (average length of interview three hours) were completed with 90 adoptive families: 45 parents who had experienced a disruption (the 'Left home' group) and 45 parents who were finding parenting challenging (the 'At home' group). The interviews allowed parents to tell the story of their adoption journeys, from their initial applications to adopt to the present day. Here, we focus on parent's accounts of how odour had influenced their family lives.

Parents' accounts

Adoptive parents were asked about the way in which they thought their child had settled into adoptive family life and about how relationships within the family had started to develop in the early days. In responding to these questions, we were surprised that some parents mentioned odour as an influencing factor. A small number of these parents described feeling very unsettled by their child's unfamiliar smell. For example, three mothers said:

He smelt strange to me and I think his odour became something that I had to try and overcome ... He would want to be cuddled close and I would be cuddling close thinking, 'Why don't you smell right?' I never told a soul at the time because it sounded like such a strange thing to say, and I guess quite primal really.

And the thing I remember was their smell - the smell was a very alien smell - a very strong smell in the bedrooms. You don't think about that when you have children, and I bought air fresheners, and then that was OK, because it overrode. It's something very basic but they do smell different.

It's taken me years of therapy to be able to admit this, and this will sound really weird, but she didn't smell right ... I have thought and thought about it ... I just wanted to understand what was wrong with me? Why I was even thinking that? How could she not smell right? She was just a little girl. What has smell got to do with anything? It was really strange and worrying.

Some parents wondered whether, what they perceived as an offensive or unfamiliar smell, was caused by the lack of shared genes. Other parents thought that perhaps it was linked to anxiety in their child. Another mother, upset by her son's odour said:

It was a very acrid smell, very overwhelming, a very overpowering smell about him. As soon as you walked into the room when he was in his cot, you could smell it. When you were holding him, it was around him. With the benefit of hindsight, it's that smell of stress, of anxiety - but he had a very powerful smell.

Adoptive parents were able to acknowledge that the child's smell had affected their own behaviour and some parents also described their initial difficulties in recognising how their child's behaviour was also affected by smell. Parents described how familiar smells seemed to either comfort or agitate their child. For example, three parents said:

He was weeing all over the house. Eventually it was confined to his bedroom, then really round his bed. I have guessed since then that he was trying to make himself feel at home. That's what his cot would have been like, as a baby and perhaps it felt comforting to him - that smell. It became overwhelming. I had to get rid of the carpet.

We went to this camping place, they had only been here a few weeks really, and they spent the entire weekend hanging around the toilets, the sluice area. They loved it there, but I could not understand why they were playing around the toilets, obsessed really with it. But it's the smell; it was very familiar to them.

If you went anywhere, he could smell smoke a mile off, which was not normal ... he had this thing about smelling smoke. Then he used to tell us about when he was in a fire and they had to crawl on the floor to get out. We found out that his grandma burnt the house down while the children were inside, and she was a very well-known arsonist.

In England, parents were not routinely asked about smell or odour in the context of adoptive family life, as at the outset of the study, it was not anticipated or known to be a matter of significance. Although twelve of the parents in the English study did talk about smell and odour, it is quite possible that other adoptive parents with similar experiences had not thought to mention it when interviewed, or were embarrassed about introducing the matter. Some parents who did talk about the odour of their child said that it was an awkward subject

to raise. As the two studies were conducted sequentially, we were able to ask parents in Wales whether they had any observations specifically about smell in relation to the adoption of their child. Six (30%) of the twenty parents interviewed in Wales said that the distinctive odour of their child, to a greater or lesser extent, had had a bearing on the early days of adoptive family life.

Practice and research implications

The role of odour in the early bonding between infant and mother has long been recognised and is thought to be an underlying factor in the increased risk of child abuse in stepfamilies. However, its role in adoption has, to our knowledge, not been described or researched. Practice experience has led social workers to recognise that smells can remind children of traumatic events or can provide comfort. For example, some social workers advise new adoptive parents to use the same washing powder as the child's foster carers and to place a child's well used blanket in their new bedroom. However, a wider understanding of the role of odour in adoptive family life has not been considered.

In this sample of families who had experienced, or were at risk of, disruption, the child's odour did affect the ease with which some mothers bonded to the child and was a potent reminder of the child's early experiences. There is a rare medical condition, trimethylaminuria resulting from a genetic condition. It causes a fishy smell in the person's urine, sweat and breath resulting in the condition being known as the 'fish odour syndrome'. Diabetes and its poor control can also affect body odour, usually by way of a distinctive sweet smelling, fruity odour. It is very unlikely that the children in this study had this condition, as none of the parents described a fishy or sweet smell. Instead, parents described an acrid smell and one that was

so powerful that they had to overcome feelings of avoidance. Parents had been unprepared for this possibility and could not raise the issue of odour with visiting social workers, as they thought they would be judged as inadequate and strange.

Findings from the study suggest that the issue of odour is raised in preparation courses and is asked about during the early weeks of an adoptive placement. It is important to give parents 'permission' to talk freely about their feelings and experiences and if smell is mentioned to consider additional ways of supporting parent and child relationships. We were only able to find mention of the role of smell in adoption in a text on international adoptions (Cogen, 2008) in which the author suggested giving the child something with the mother's smell on it. However, this advice could be reversed. At the outset of introductions adoptive parents could be given something belonging to the child (perhaps a worn item of clothing), to help parents start to familiarise themselves with their child's odour.

We also know that moves are very stressful for children and that perhaps the acrid smell was a chemical indication of the child's level of stress. Whilst the adoptive parents and the social worker may be overjoyed that the child has been placed, the child may be grieving the loss of their foster carer, birth parents or siblings. Along with the more usual social work interventions, the power and significance of odour could be more widely recognised and used. Research shows that natural odours can calm infants and there is some evidence that artificial odours using lavender and orange may also relieve infant stress. There has been some interesting work to show that the smell of orange and lavender in dentist's waiting rooms reduced patient's anxiety! (Lehrner et al, 2005)

Parents also need to be prepared for how odour evokes very early autobiographical memories and reminders of past emotional experiences (Chu and Downes 2002). Social workers need to know that the reports from parents of memory triggers do have a scientific basis. Parents did not usually recognise at the time of the incident what had occurred but as they sought more information were able to see the patterns in their child's behaviour.

We need to understand much more about the role of odour. The significance of odour was unexpected and we did not ask questions in the research interview about how long it took for the smell to disappear or whether parents had grown accustomed to the smell. Most of the parents interviewed were mothers and we did not ask if their partner and other children in the family noticed the smell too and importantly whether the child being placed has a similar experience. Did some children experience their new home or parent as smelling bad too?

Research has indicated that children whose difficulties lie on the autistic spectrum sometimes have sensory processing difficulties that disrupt the sense of smell. Affected children can be extremely sensitive to smells. In the English study of adoptive families who had experienced a post order disruption or were finding parenting very challenging, 23% of the children had been diagnosed as having an autistic spectrum disorder. We do not know if odour influenced the ability of children to settle into a new family.

Since completing the study and learning more about the importance of odour, we have wondered about the role of odour in matching and introductions. Research (e.g. Weisfeld et al, 2003) has shown that the use of oral contraception changes the way women perceive smells. Oral contraceptives block conception by tricking the body into thinking it is already pregnant. Sometimes prospective adoptive mothers are asked to use contraception prior to

and at the time the child is placed. Does the use of contraception have any effect on the way mother's perceive the smell of the new child? It would also be interesting to know if smell plays any role in adopter led matching. We know that parents who have selected their own child through events such as activity days describe 'falling in love' or a 'click' and 'fit' with the child. Is smell playing an unconscious role in selection?

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